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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,268	07/03/2003	Elan Yogeswaren	PAT028US	4930
32656	7590	07/06/2005	EXAMINER	
W-H ENERGY SERVICES, INC. 10370 RICHMOND AVENUE SUITE 990 HOUSTON, TX 77042			BUDD, MARK OSBORNE	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 07/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/613,268

Applicant(s)

YOGESWAREN, ELAN

Examiner

Mark Budd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 14, 17-21, 25-30, 34, 37-41, 45 and 46 is/are rejected.
- 7) ☒ Claim(s) 11-13, 15, 16, 22-24, 31-33, 35, 36 and 42-44 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7-3-03&9-27-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 26-28 and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Oakley.

Note figure 3 and col. 8, lines 22-30 which shows a piezoelectric transducer having piezoelements, two impedance matching layers #48, #49 and aluminum barrier layer #53.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-9, 17-19 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oakley.

Oakley teaches the transducer structure but does not use some of the claimed materials and does not explicitly teach some of the specific acoustic impedance values. However, it has long been held that optimization of a known device and selection from among known materials are within the skill expected of the routineer. Thus to provide specific MRayl values for any particular application and/or select titanium or stainless steel as the moisture barrier would have been obvious to one of ordinary skill in the art. Selection of materials would be based on e.g. cost, strength, ease of manufacture etc.

Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Kaarmann or Thurn.

Kaarmann (Figs. 1 and 3) teaches an acoustic impedance matching layer #9 made of ceramic material connected to an electroded piezoelectric element #7. Thurn (fig. 6) teaches a ceramic matching layer (alumina) #3 coupled to an appropriately electroded piezoelectric element #2.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaarmann or Thurn.

The references fail to teach the specific acoustic impedance values. However, as noted above, selection of specific values based on any particular application of a device would have been obvious to one of ordinary skill in the art.

Claim 34 rejected under 35 U.S.C. 102(b) as being anticipated by Kaarmann.

Note Kaarmann figure 3.

Claim 37 rejected under 35 U.S.C. 102(b) as being anticipated by Inoue or Birth.

Inoue (best shown in figs. 1 and 4-6) teaches a piezoelectric element #10, with electrodes protected by a barrier layer #7. Birth (Fig. 2) teaches piezoelectric element #22 with electrodes protected by barrier layer #6. (See col. 5, lines 20-35).

Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue or Birth.

The references do not explicitly teach the specific use of titanium or the acoustic impedance values. However, as previously explained, selection of specific materials

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and parameter values for any particular application would have been obvious to one of ordinary skill in the art.

Claim 45 rejected under 35 U.S.C. 103(a) as being unpatentable over Dowell in view of Oakley.

Dowell teaches (Figs. 25 and 10) a tool that incorporates a piezoelectric transducer in its cylindrical housing. The piezoelectric transducer does not explicitly include a matching layer and a barrier layer. However, Oakley, (fig. 3) teaches impedance matching layers #48, #49 and barrier layer #53. The impedance matching layers increase transducer efficiency in a well known manner. The barrier layer provides moisture protection. Thus for at least these reasons it would have been obvious to provide Dowell with impedance matching and barrier layers.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 20, 21, 40 and 41 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 26 of copending Application No. 10/613375. Although the conflicting claims are not identical,

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they are not patentably distinct from each other because the claims differ only in the specific diaphragm material and/or the specific matching layer material. It has long been held that selection from among known materials is within the skill expected of the routineer. Such selections are based on such factors as costs, strength, ease of manufacture, resistance to known environmental factors etc. Thus to select specific materials would have been obvious to one ordinary skill in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 11-13, 15, 16, 22-24, 31-33, 35, 36 and 42-44 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Further cited of interest to show acoustic impedance matching are Tone, Ito, Finsterwald and Shiraishi.

Budd/ds

06/20/05


MARK A. BUDD
PRIMARY EXAMINER
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